

**Subject**  
Science

## Cracking the code: decoding a Weather forecast

### BACKGROUND

Weather is an important aspect of daily life on land and life aboard a sailboat, especially when planning a trip. Here in the Caribbean, Chris Parker of the Caribbean Weather Network, is a professional marine weather forecaster who provides weather forecasts to sailors and fishermen on Single Sideband Radio (SSB). He uses satellite imagery and a variety of weather models to predict the weather.

### Summary

Students will interpret a weather forecast and make a recommendation for what day to travel

*Amanzi* has been sailing around the British Virgin Islands for the last few weeks. We have provisioned (bought people and cat food, fuel and water) in Trellis Bay, Beef Island. Now we are planning to travel southeast to the next island, St. Maarten, with plans to carry on to the island of Antigua for its annual Sailing Regatta. (This is a race where they expect more than 200 sailboats to participate with more than 5000 people watching).

### Overall

#### Expectations.

Students will explain a weather forecast to help make a decision of when to travel from one place to another.

We contacted Chris Parker by email to find out if there were any approaching weather systems and asked his advice about when to leave Trellis Bay for St. Maarten and ultimately Antigua. He emailed us his forecast.

### Specific

#### Expectations

Students will explain all the terms of a weather forecast.

#### *Sailing fact to remember:*

*If the wind is more than 25 knots (kts) it will be uncomfortable on board the boat.*

Students will apply their understanding of a compass and weather data and make a prediction of when to travel to the next destination

**Challenge:** You are a crewmember on *Amanzi*. Your job is to read over the weather data that Chris Parker has sent and make a decision when to leave Trellis Bay for St. Maarten.

### Author

Kim Saunders

Weather data emailed to *Amanzi* from Chris Parker,  
the marine weather forecaster with the Caribbean Weather Network

**General Forecast:**

Continued mild weather across E Caribbean...winds a bit stronger than expected (15-20 kts) along Puerto Rico. Winds running lighter than expected (12-16 kts) in most of E Caribbean including the Virgin Islands, St. Maarten, St. Kitts and Antigua, generally from the E to ESE.

**Wind:**

Saturday: 130@14 kts in the morning, 11 kts in the afternoon; 130@8 kts tomorrow & Mon; 050@10 kts on Tue, building to 17 kts later in the day; 070@25 kts on Wed.  
Thurs: 110@15 kts; Friday: 120@13 kts, gradually changing to 060@15 kts late Friday

**Seas or Sea State:**

Saturday: N swells 2-3 feet through to Mon; 4 feet from NNE Tue and 5 feet Wed; Thurs: 4-5 feet from E building to 5-6 feet Fri.

**Activity 1**

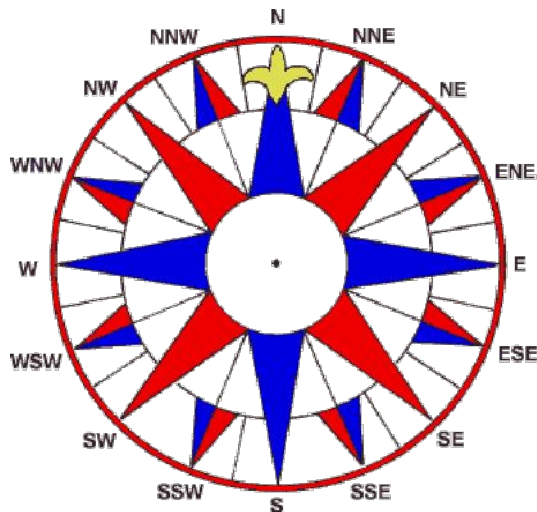
There are 3 components to Chris Parker's forecast. There is the **General forecast**, the **Wind** and the **Seas or Sea state**. All three components are very important to a sailor or fisherman.

In order for you to crack Chris Parker's code and decide when *Amanzi* should leave for St. Maarten, there are several facts you need to know.

Fact #1 Abbreviations to understand:

Cardinal directions of a compass:	Days of the week:	Wind speed measurement:
E – East	Mon – Monday	kts – knots
ESE – East SouthEast	Tue - Tuesday	
N – North	Wed – Wednesday	
NNE – North NorthEast	Thurs - Thursday	
	Fri – Friday	
	Sat – Saturday	
	Sun - Sunday	

Fact #2 Below is a compass with the cardinal directions measured in degrees:



Cardinal Direction	Degrees
N	0 and 360
NNE	20 - 25
NE	45
ENE	65 -70
E	90
ESE	110 - 115
SE	135
SSE	155 -160
S	180
SSW	200 -205
SW	225
WSW	245 -250
W	270
WNW	290 -295
NW	315
NNW	335 -340

Now you have to use the facts to decode the weather email. Here is a little help to get you started.

a) General Forecast: this is a general overview of the weather for the area referred to as the Eastern Caribbean. The Eastern Caribbean includes Puerto Rico, the Virgin Islands, St. Maarten and surrounding islands. The forecast describes in general terms what the strength of the wind will be. Read the next section to understand more fully the wind strength.

b) Wind: The wind is described in 2 ways – its strength or wind speed in knots **and** the direction it is blowing from. For example, 10 – 12 kts means the wind is blowing 10 to 12 knots (a knot is a measure of speed. So, to help picture speed, think of the speed of a car or bike in kilometer/hour) A knot is about twice as fast as a kilometer. The Direction of the wind is always described **from where it comes** as indicated on a compass. It can be described in 2 ways - using points on a compass such as N-S-E-W or any cardinal direction in between; or using degrees on a compass that correspond with the cardinal directions. For example, wind from the E to ESE means it is coming from the East to East Southeast. The measurement of East on a compass is 90 degrees and East Southeast on a compass is from 110 to 115 degrees. So, wind from the E to ESE is coming from 90 degrees to about 115 degrees. Look at Fact 2 where the compass indicates the cardinal directions and then refer to the table to see the corresponding degrees.

c) Sea or Sea State: this describes the direction the swell or **waves are coming from** and always gives a **wave height** measured in feet. For example, in the forecast, N swell 2 – 3 ft through to Mon means swell or waves are coming from the North that are 2 to 3 feet in height. This swell will last until Monday.

- Using your knowledge of weather, sort the weather data from Chris Parker's email. Complete the chart, under each of the headings. All the information to complete the chart is in Chris Parker's weather email. Saturday is done for you.

Day	Wind speed (knots)	Wind Direction (degrees)	Cardinal compass direction	Sea State (feet)
Sat	14 - 11	130		N 2-3
Sun	8			N 2-3
Mon				N 2-3
Tues		050		NNE ____
Wed	25			____ 5
Thurs		110		E ____
Fri	____ - 15	____ - 060		____ 5- 6

## ACTIVITY 2 – Cracking the code with a partner

After reviewing the facts and practicing to decode some of the weather forecast, work with a partner to make your decision about when *Amanzi* should leave Trellis Bay for St. Maarten.

- After sorting the weather into the chart, what does it all mean? Go through the data and describe the weather for **each day of the week** including **Wind and Seas**. Here is an explanation of the forecast for Saturday:

**Generally:** winds will be generally lighter in the Virgin Islands and St. Maarten.

**Wind:** the wind will blow 14 knots in the morning and drop down to 11 knots from the SSE by the afternoon.

**Seas or sea state:** seas will have waves coming from the North and they will measure 2 to 3 feet (less than 1 metre) in height. Write out an explanation for the other days of the week.

- Using the weather data you charted, the sailing facts and answers to the questions, which day does *Amanzi* set sail, Matie? Remember to give reasons to your captain.

*See you in St. Maarten*